

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P199900127 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK00/00037	International filing date (day/month/year) 28/01/2000	Priority date (day/month/year) 28/01/1999
International Patent Classification (IPC) or national classification and IPC A63H30/00		
Applicant LEGO A/S et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 18/08/2000	Date of completion of this report 10.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Squeri, M Telephone No. +49 89 2399 8417 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00037

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-19 with telefax of 23/04/2001

Drawings, sheets:

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00037

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-19
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

SECTION V:

1. A remote controlled toy element, suitable for remote control by means of signals from a remote control unit, is known from the document US-A-4938483 (D1). In this document is, however, not disclosed that the toy element is adapted to select a program step in response to information in the temporal occurrences of a user's activation of the remote control unit.

Therefore, claim 1 meets the requirements of Article 33.2 PCT.

In the available prior art there is no suggestion that it could be possible to select a program step in a toy element in response to information in the temporal occurrences of a user's activation of the remote control unit, thereby improving the versatility of the toy element.

Consequently, claim 1 involves also an inventive step (Article 33.3 PCT).

The subject-matter of claim 1 is industrially applicable as a remote controlled toy element (Article 33.4 PCT).

2. Claims 2-19 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

SECTION VII:

3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2.b PCT).
4. Contrary to the requirements of Rule 5.1.a.ii PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
5. According to the requirements of Rule 11.13.I reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference signs: 601, 602 and 606 at page 11 of the description.

SECTION VIII:

6. The use of the definite article "the" before "signal", in line 8 of claim 1, is considered to be inappropriate since the signal, before this point, has been introduced only after a "for" and, consequently, it is not claimed (Guidelines PCT, Section IV, Chapter III, 4.8.a)
7. It is not clear which part of the toy element is the "unit" claimed at line 25 of claim 1 (Art. 6 PCT).
8. Claim 12 is directed to a "remote controlled toy". This wording, however, is considered to be inconsistent with the wording of the preceding claims (Rule 10.2 PCT).
9. Claims 13-19 are directed to a "toy". This wording, however, is considered to be inconsistent with the wording of the preceding claims (Rule 10.2 PCT).

1

PATENT CLAIMS (AMENDED):

1. A remote controlled toy element for remote control by
5 means of signals from a remote control unit preferably a
pocket torch, said toy element comprising

a sensor which can detect the signals,

10 at least one unit which is controlled by a microprocessor
in response to a program which is executed by the micro-
processor, said program comprising program steps,

c h a r a c t e r i z e d in that
15 the toy element is adapted to determine the temporal
occurrences of a user's activations of the remote control
unit based on pulse patterns in the detected signals,
where two consecutive occurrences are separated by an
20 interval that is longer than the response time of a human
being; and

25 to control the unit by selecting a program step in
response to information in the temporal occurrences of a
user's activations of the remote control unit.

30 2. A remote controlled toy element according to claim 1,
c h a r a c t e r i z e d in that the toy element is
adapted to respond to pulses of light.

3. A remote controlled toy element according to claim 1,
35 c h a r a c t e r i z e d in that the apparatus is
adapted to respond to pulses of visible light.

4. A remote controlled toy element according to claim 1, characterized in that the apparatus is adapted to response to sound pulses.

5

5. A remote controlled toy element according to claim 1, characterized in that said intervals are longer than 100 milliseconds, 200 milliseconds or 300 milliseconds.

10

6. A remote controlled toy element according to claim 1, characterized in that said intervals are longer than the smallest intervals which a human being can produce by an oscillating movement of a part of the body.

15

7. A remote controlled toy element according to claim 1 and having at least two different functions which are selected by means of signals from a remote control unit, wherein toy elements, after a received signal for selection of function, are adapted to emit a signal which depends on the received signal.

20

8. A remote controlled toy element according to claim 7, characterized in that the emitted signal is an acoustic signal.

25

9. A remote controlled toy element according to claim 7, characterized in that the emitted signal is an optical signal.

30

10. A remote controlled toy element according to claim 7, characterized in that the signal is emitted before the selected function is carried out.

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11. A remote controlled toy element according to claim 7, c h a r a c t e r i z e d in that the apparatus is adapted to compare a signal received from the remote control unit with a plurality of expected signals, and to
5 emit a first signal in the event that the received signal matches one of the expected signals, and to emit a second signal in the event that the received signal does not match any of the expected signals.
- 10 12. A remote controlled toy according to any one of claims 1 through 11, characterized in further comprising:

a receiver for reception of instructions for programming the toy as well as means for execution of received
15 instructions, wherein the toy has a transmitter for transmission of instructions to a second toy.
13. A toy according to claim 12, c h a r a c t e r -
i z e d in that its receiver is adapted for wireless re-
20 ception of instructions.
14. A toy according to claim 12, c h a r a c t e r -
i z e d in that its receiver is adapted for reception of infrared signals.
25
15. A toy according to claim 12, c h a r a c t e r -
i z e d in that its receiver is adapted for reception of visible light.
- 30 16. A toy according to claim 12, c h a r a c t e r -
i z e d in that its receiver comprises a keyboard for manual input of instructions.
17. A toy according to claim 12, c h a r a c t e r -
35 i z e d in that its transmitter is adapted for wireless transmission of instructions to the second toy.

AMENDED SHEET

4

18. A toy according to claim 17, c h a r a c t e r -
i z e d in that its transmitter is adapted for transmis-
sion of infrared signals.

5

19. A toy according to claim 16, c h a r a c t e r -
i z e d in that, via the keyboard, it is adapted to re-
ceive a program comprising at least two instructions for
transmission to the second programmable toy.

10

PATENT COOPERATION TREATY

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From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

PRIUDL booklet

HOFMAN-BANG A/S
Hans Bekkevolds Allé 7
DK-2900 Hellerup
DANEMARK

RECEIVED

12 MAR 2000

Hofman-Bang & Rørdam
Advokater & Revisorer

Date of mailing (day/month/year) 28 April 2000 (28.04.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P199900127 WO	
International application No. PCT/DK00/00037	
International publication date (day/month/year) Not yet published	
Applicant LEGO A/S et al	International filing date (day/month/year) 28 January 2000 (28.01.00) Priority date (day/month/year) 28 January 1999 (28.01.99)

- The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed to Rule 17.1(c)** which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed to Rule 17.1(c)** which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
28 Janu 1999 (28.01.99)	PA 1999 00105	DK	23 Marc 2000 (23.03.00)
04 Febr 1999 (04.02.99)	PA 1999 00144	DK	23 Marc 2000 (23.03.00)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Tessadel PAMPLIEGA *Tdp*

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

Bluford

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To: HOFMAN-BANG A/S Hans Bekkevolds Allé 7 DK-2900 Hellerup DANEMARK	RECEIVED 14 AUG. 2000 Hofman-Bang & Boutard, Lehmann & Ree A/S
--	--

Date of mailing (day/month/year) 03 August 2000 (03.08.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference P199900127 WO			
International application No. PCT/DK00/00037	International filing date (day/month/year) 28 January 2000 (28.01.00)	Priority date (day/month/year) 28 January 1999 (28.01.99)	
Applicant LEGO A/S et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
AU,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
GE,GH,GM,HR,HU,ID,IL,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,NO,
NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
03 August 2000 (03.08.00) under No. WO 00/44464

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer J. Zahra Telephone No. (41-22) 338.83.38
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**NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF
THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES**

Date of mailing (day/month/year) 03 August 2000 (03.08.00)	IMPORTANT NOTICE
Applicant's or agent's file reference P199900127 WO	International application No. PCT/DK00/00037
<p>The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.</p>	

PATENT COOPERATION TREATY

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From the INTERNATIONAL BUREAU

PCT

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

HOFMAN-BANG A/S
Hans Bekkevolds Allé 7
DK-2900 Hellerup
DANEMARK

RECEIVED

23 OCT. 2000

Hofman-Bang & Boutard,
Lehmann & Rec A/s

Date of mailing (day/month/year) 17 October 2000 (17.10.00)		
Applicant's or agent's file reference P199900127 WO		IMPORTANT INFORMATION
International application No. PCT/DK00/00037	International filing date (day/month/year) 28 January 2000 (28.01.00)	
Applicant LEGO A/S et al		Priority date (day/month/year) 28 January 1999 (28.01.99)

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW
 EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
 National : AU, BG, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 National : AE, AL, AM, AT, AZ, BA, BB, BR, BY, CH, CR, CU, DK, DM, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MW, MX, PT, SD,
 SG, SI, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Nestor Santesso

Telephone No. (41-22) 338.83.38

Form PCT/IB/332 (September 1997)

3588970

Attorney Docket No.: 2388-796
 Express Mail Label No.: ET025234430US

PATENT COOPERATION TREATY

RECD 15 MAY 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P199900127 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK00/00037	International filing date (day/month/year) 28/01/2000	Priority date (day/month/year) 28/01/1999
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- VII ☒ Certain defects in the international application
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Date of submission of the demand 18/08/2000	Date of completion of this report 10.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Squeri, M Telephone No. +49 89 2399 8417 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00037

I. Basis of the report

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1-19 with telefax of 23/04/2001

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- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
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- ☐ contained in the international application in written form.
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00037

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Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-19
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

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see separate sheet

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see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/DK00/00037

SECTION V:

1. A remote controlled toy element, suitable for remote control by means of signals from a remote control unit, is known from the document US-A-4938483 (D1). In this document is, however, not disclosed that the toy element is adapted to select a program step in response to information in the temporal occurrences of a user's activation of the remote control unit.

Therefore, claim 1 meets the requirements of Article 33.2 PCT.

In the available prior art there is no suggestion that it could be possible to select a program step in a toy element in response to information in the temporal occurrences of a user's activation of the remote control unit, thereby improving the versatility of the toy element.

Consequently, claim 1 involves also an inventive step (Article 33.3 PCT).

The subject-matter of claim 1 is industrially applicable as a remote controlled toy element (Article 33.4 PCT).

2. Claims 2-19 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/DK00/00037

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9. Claims 13-19 are directed to a "toy". This wording, however, is considered to be inconsistent with the wording of the preceding claims (Rule 10.2 PCT).

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

HOFMAN-BANG A/S
Hans Bekkevolds Allé 7
DK-2900 Hellerup
DANEMARK

Date of mailing (day/month/year) 16 July 2001 (16.07.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P199900127 WO	
International application No. PCT/DK00/00037	International filing date (day/month/year) 28 January 2000 (28.01.00)

1. The following indications appeared on record concerning:

☒ the applicant
 ☒ the inventor
 ☐ the agent
 ☐ the common representative

Name and Address DOOLEY, Mike 126 East Bluegill Lane Suffield, CT 06078 United States of America	State of Nationality US	State of Residence US
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
 ☐ the name
 ☒ the address
 ☐ the nationality
 ☐ the residence

Name and Address DOOLEY, Mike 1055 Cresta Way #9 San Rafael, CA 94303 United States of America	State of Nationality US	State of Residence US
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Marie-José Devillard Telephone No.: (41-22) 338.83.38
---	--

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C. 20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 17 October 2000 (17.10.00)	
International application No. PCT/DK00/00037	Applicant's or agent's file reference P199900127 WO
International filing date (day/month/year) 28 January 2000 (28.01.00)	Priority date (day/month/year) 28 January 1999 (28.01.99)
Applicant DOOLEY, Mike et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 18 August 2000 (18.08.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Nestor Santesso Telephone No.: (41-22) 338.83.38
--	--

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P199900127 WO	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/DK 00/ 00037	International filing date (day/month/year) 28/01/2000	(Earliest) Priority Date (day/month/year) 28/01/1999
Applicant LEGO A/S et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

5



None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A63H30/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A63H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 802 879 A (RISSMAN OWEN R ET AL) 7 February 1989 (1989-02-07) column 1, line 40 -column 2, line 36 abstract	1-12
X	DE 34 04 260 A (KLIR GMBH V) 15 November 1984 (1984-11-15) page 4, line 18 -page 5, line 14 abstract	1,3-7
X	CH 678 153 A (TAKARA CO LTD) 15 August 1991 (1991-08-15) column 9, line 56 -column 10, line 18; figure 8 abstract	1-6

	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

17 April 2000

Date of mailing of the international search report

14. 06. 2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Caroline Stolt/AB

INTERNATIONAL SEARCH REPORT

International Application No

EP/DK 00/00037

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>GB 2 215 227 A (TAKARA CO LTD) 20 September 1989 (1989-09-20) page 5, line 9 - line 20 -----</p>	1-6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

DK 00/00037

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4802879	A	07-02-1989	US 4813907 A	21-03-1989
DE 3404260	A	15-11-1984	NONE	
CH 678153	A	15-08-1991	JP 3083629 A	09-04-1991
			JP 3176097 A	31-07-1991
			JP 2118513 C	06-12-1996
			JP 3178685 A	02-08-1991
			JP 8032281 B	29-03-1996
			JP 2097213 C	02-10-1996
			JP 3202093 A	03-09-1991
			JP 7100089 B	01-11-1995
			AU 614219 B	22-08-1991
			AU 5015890 A	03-01-1991
			CA 2019397 A	16-08-1990
			CN 1048357 A	09-01-1991
			DE 4012587 A	14-03-1991
			DE 9010048 U	13-09-1990
			DK 79990 A	31-12-1990
			FR 2649905 A	25-01-1991
			GB 2229646 A,B	27-07-1990
			HK 491 A	11-01-1991
			IT 1240194 B	27-11-1993
			NL 9000534 A	16-01-1991
			NO 901551 A	02-01-1991
			PT 93650 A	31-01-1992
			SE 9001232 A	31-12-1990
			SG 96190 G	18-01-1991
			US 5303491 A	19-04-1994
			BE 1002173 A	25-09-1990
			BR 9001087 A	15-10-1991
			ES 2021215 A	16-10-1991
			LU 87698 A	07-05-1991
			US 5134796 A	04-08-1992
			GR 90200109 U	30-12-1991
			ZA 9002511 A	30-01-1991
GB 2215227	A	20-09-1989	US 4944708 A	31-07-1990

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

Receiving Office use only

International Application No.

PCT/DK 00/00037

International Filing Date

28 JANUARY 2000



Danish Patent and Trademark Office

Name of receiving Office

PCT International Application

Applicant's or agent's file reference (if desired) (12 characters maximum)

P199900127 WO

Box No. I	TITLE OF INVENTION		
	Remote Controlled Toy		
Box No. II	APPLICANT		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) LEGO A/S Aastvej 1 DK-7190 Billund Denmark		<input type="checkbox"/> This person is also inventor. Telephone No. Facsimile No. Teleprinter No.	
State (that is, country) of nationality: DK Denmark		State (that is, country) of residence: DK Denmark	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input checked="" type="checkbox"/> the States indicated in the Supplemental Box			
Box No. III	FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) INTERLEGO AG Neuhofstrasse 21 CH-6340 Baar Switzerland		This person is: <input checked="" type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)	
State (that is, country) of nationality: CH Switzerland		State (that is, country) of residence: CH Switzerland	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input checked="" type="checkbox"/> the States indicated in the Supplemental Box			
<input checked="" type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.			
Box No. IV	AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE		
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:		<input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) Hofman-Bang A/S Hans Bekkevolds Allé 7 DK-2900 Hellerup Denmark		Telephone No. +39 48 80 00 Facsimile No. +39 48 80 80 Teleprinter No. 19 085 hbb dk	
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and space above is used instead to indicate a special address to which correspondence should be sent.			

CONFIRMATION COPY

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

DOOLEY, Mike
126 East Bluegill Lane
Suffield, CT 06078
USA

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

US United States of America

State (that is, country) of residence:

US United States of America

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

MUNCH, Gaute
Granslevbyvej 19
DK-8870 Langå
Denmark

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

DK Denmark

State (that is, country) of residence:

DK Denmark

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

RASMUSSEN, Jesper
Thit Jensen Vej 37
DK-7182 Bredsten
Denmark

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

DK Denmark

State (that is, country) of residence:

DK Denmark

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|---|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria and Utility Model | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic and Utility Model | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany and Utility Model | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark and Utility Model | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> EE Estonia and Utility Model | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> FI Finland and Utility Model | <input checked="" type="checkbox"/> SK Slovakia and Utility Model |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | |
| <input checked="" type="checkbox"/> IS Iceland | |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZA South Africa |
| | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KR Republic of Korea | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |
| <input checked="" type="checkbox"/> KZ Kazakhstan | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> LC Saint Lucia | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> LK Sri Lanka | |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed.

2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.

Continuation of Box II:

LEGO A/S: All designated states except:
AU, BR, CA, CN, GB, IE, IN, MX, NZ, SG and US

Continuation of box III:

INTERLEGO AG: AU, BR, CA, CN, GB, IE, IN, MX, NZ, SG

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 28.1.1999	PA 1999 00105	DK Denmark		
item (2) 4.2.1999	PA 1999 00144	DK Denmark		
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA)
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA/ EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

1.2.1999

DK 99/00026

DK Denmark

5.2.1999

DK 99/00027

DK Denmark

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 5
description (excluding sequence listing part) : 16
claims : 3
abstract : 1
drawings : 7
sequence listing part of description :
Total number of sheets : 32

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other (specify): DK 99/00026 + DK 99/00027

Figure of the drawings which should accompany the abstract:

5

Language of filing of the international application:

Danish

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

LEGO A/S

INTERLEGO AG

Mike Dooley

Gaute Munch

Jesper Rasmussen

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application: RO/DK 28. JAN 2000 (28.01.2000)		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
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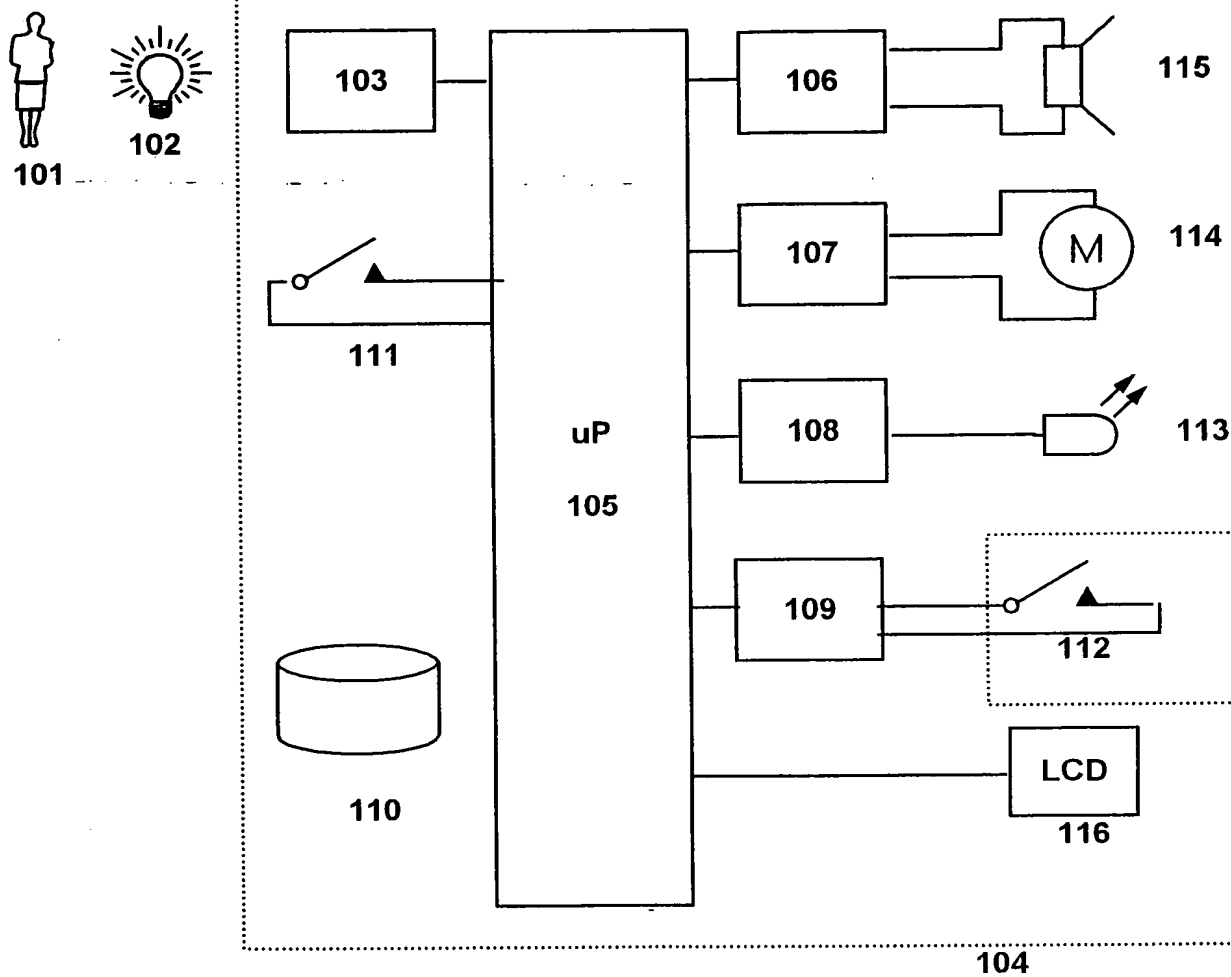


Fig. 1

2/7

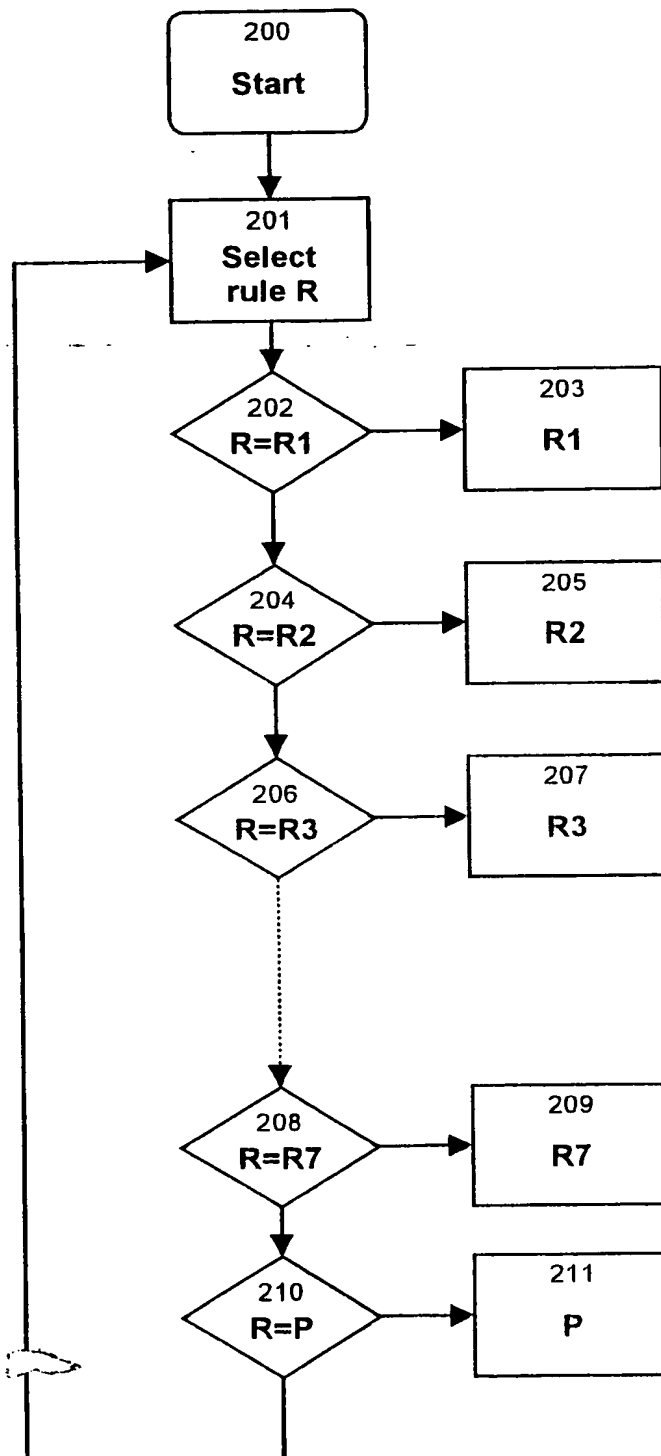


Fig. 2

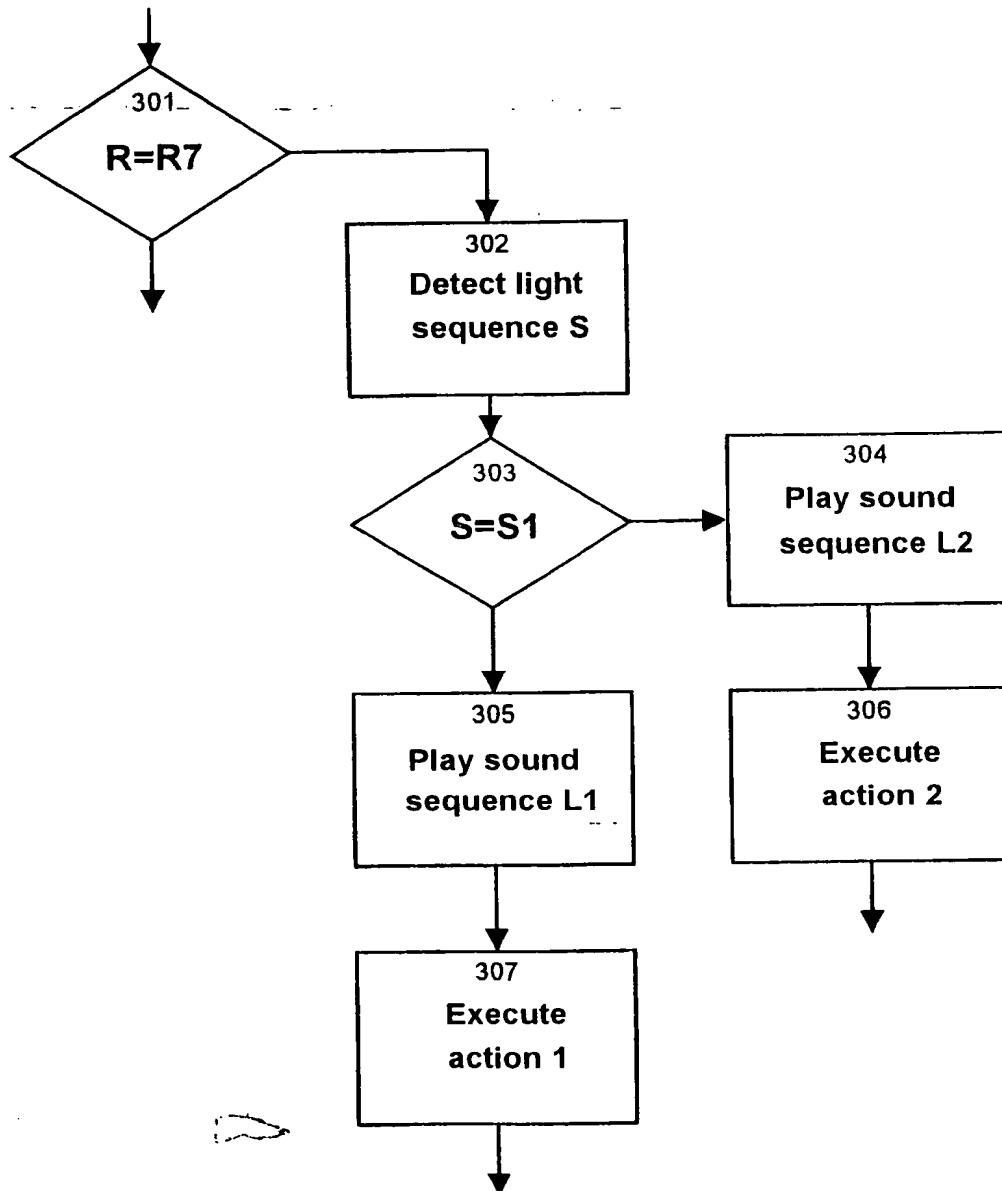


Fig. 3

4/7

Pulse patterns

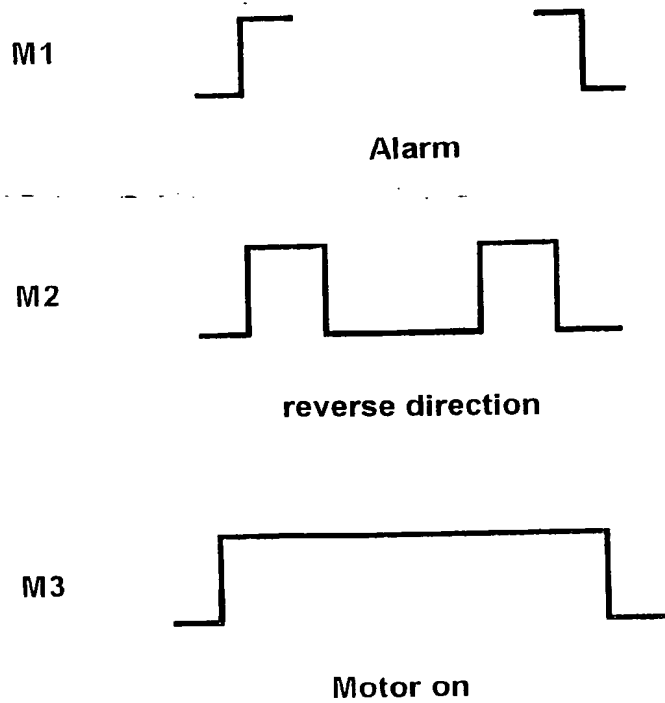


Fig. 4

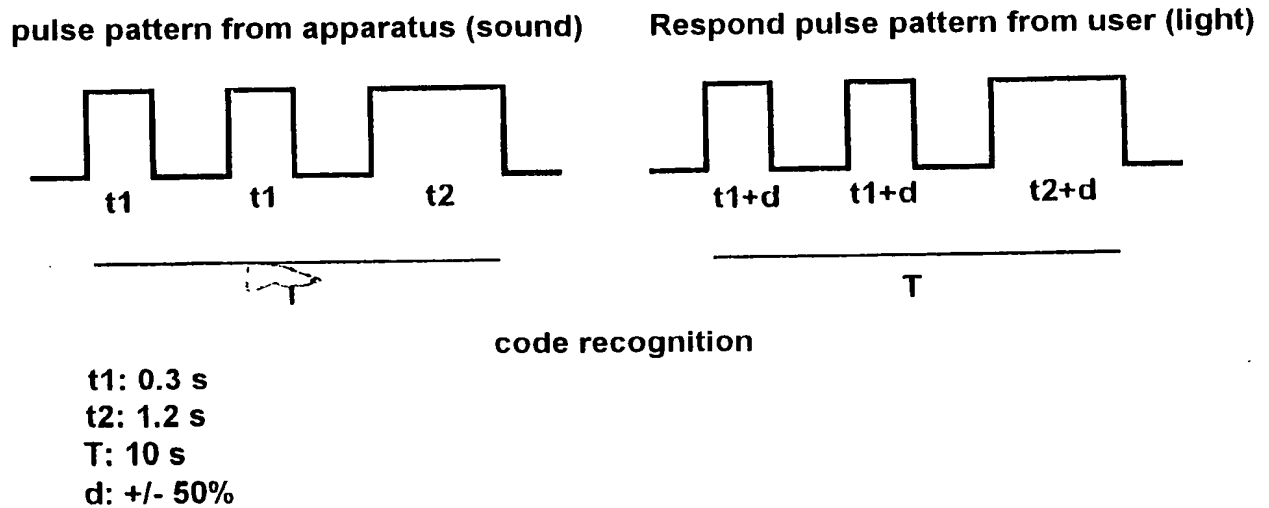


Fig. 5

5/7

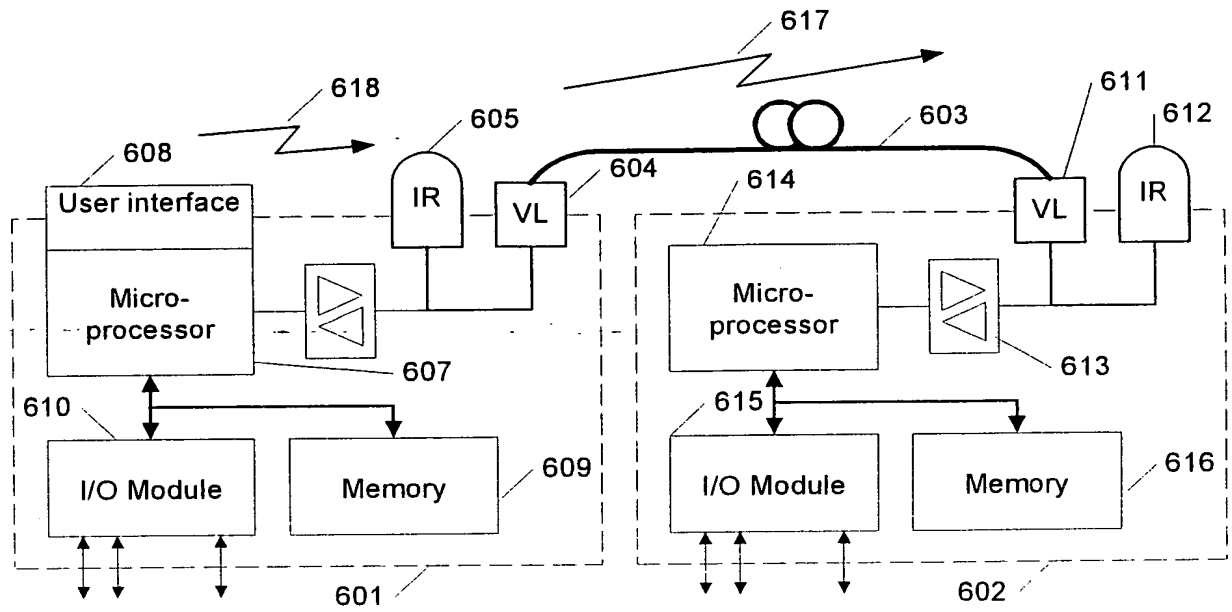


Fig. 6

6/7

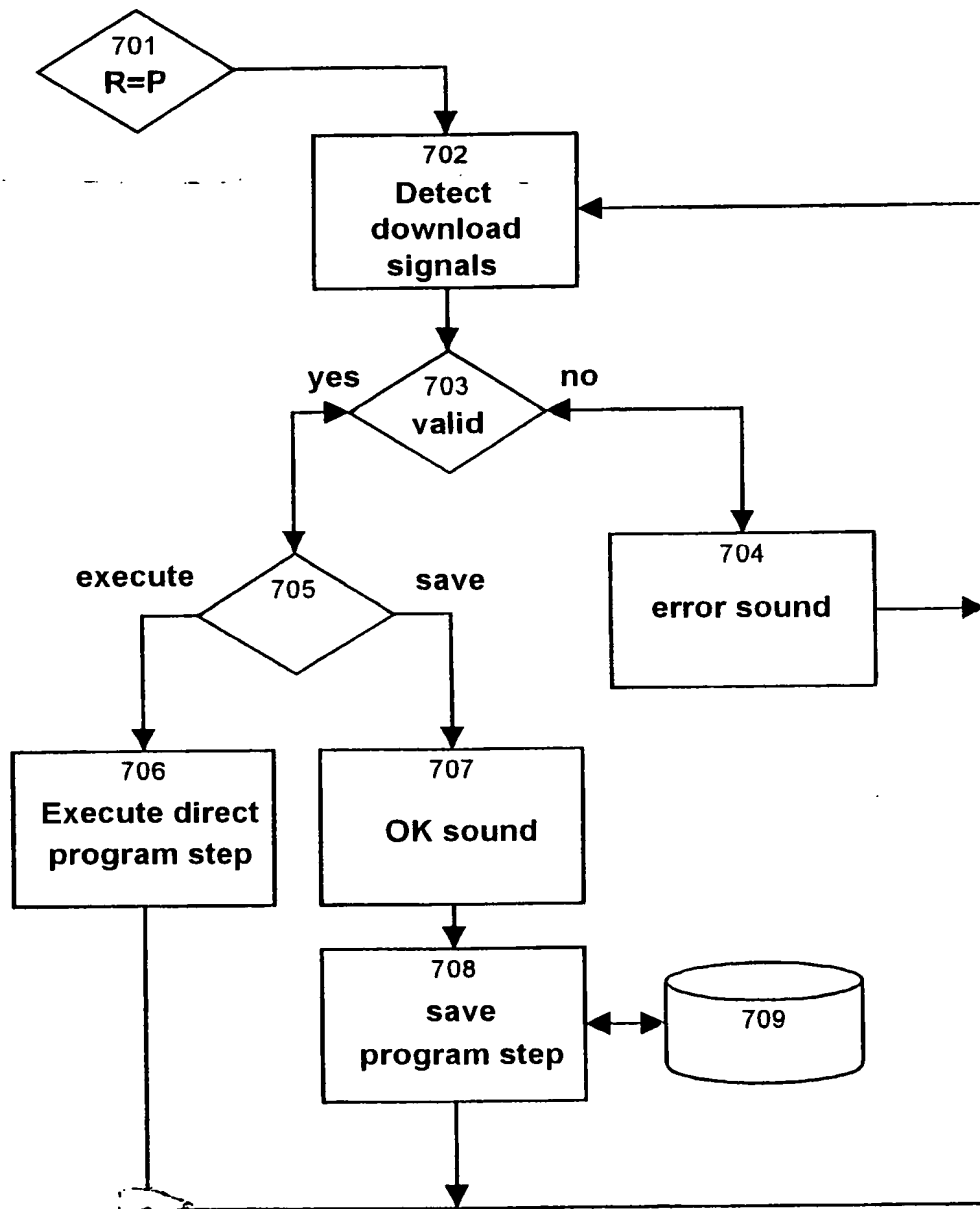


Fig. 7

7/7

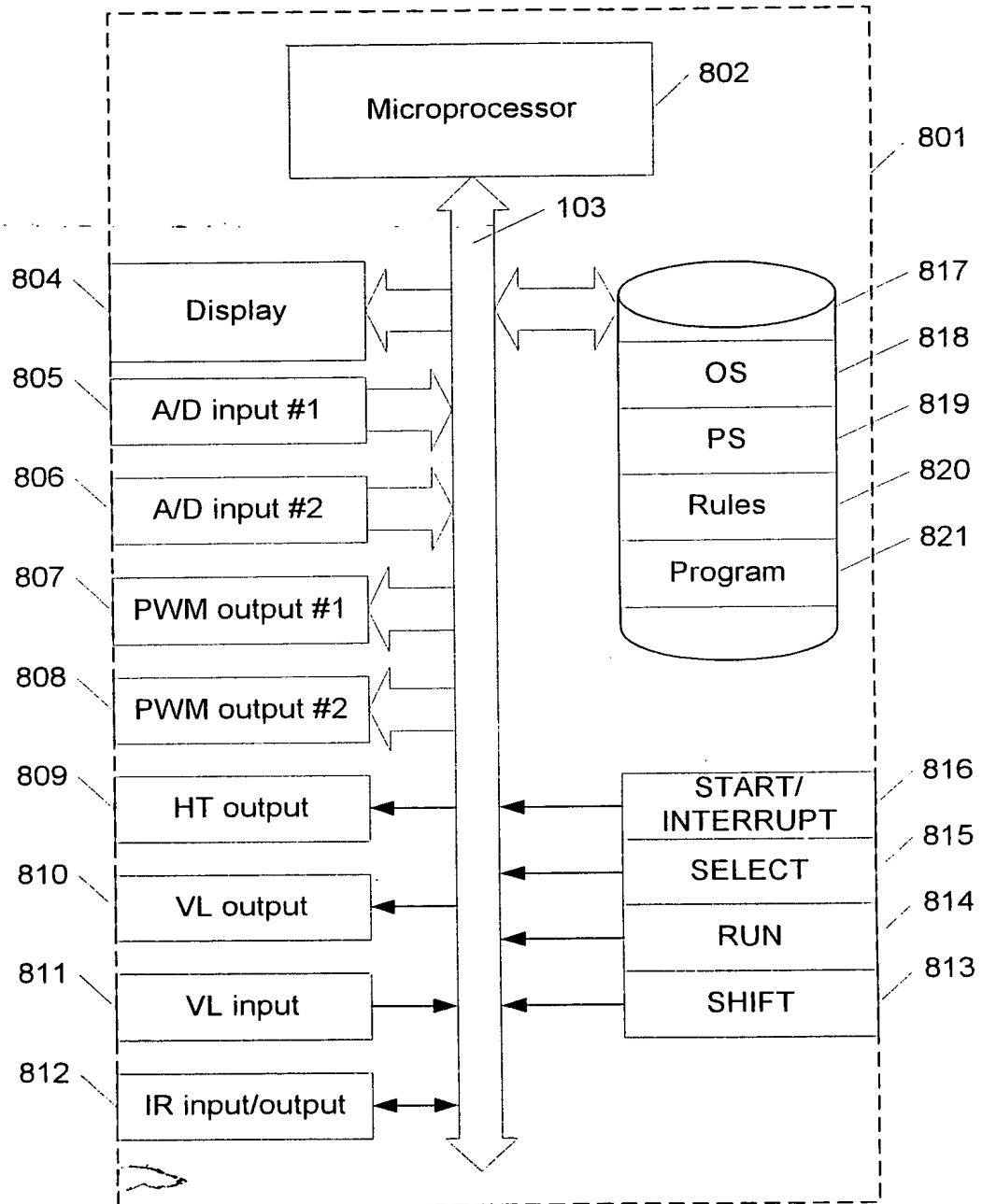


Fig. 8

Fjernbetjent legetøjsselement


Denne opfindelse angår et fjernbetjent legetøjsselement til fjernbetjening ved hjælp af signaler fra en fjernbetjeningsenhed, hvor legetøjsselementet omfatter en
5 sensor, der kan detektere signalerne og mindst en enhed, der styres af en mikroprocessor i afhængighed af et program, som eksekveres af mikroprocessoren, hvor programmet omfatter programtrin.

10 Sådanne legetøjsselementer er udbredte og kendes eksempelvis fra produktet ROBOTICS INVENTION SYSTEM fra LEGO MINDSTORMS, som er et legetøj, som ved hjælp af en computer kan programmeres til at foretage såvel betingede som ubetingede handlinger.

15 Sådanne legetøjsselementer er særlige i det at programmer eller andre former for instruktioner overføres til legetøjet ved hjælp af en form for kommunikationsprotokol. Typisk vil kommunikationsprotokollen være indrettet til at overføre data til
20 legetøjet på den hurtigst mulige og samtidig mest fejlfri måde, for at opnå en god og hurtig respons.

Det er imidlertid et problem med sådant legetøj, at det fulde legepotentiale ikke er fuldt udnyttet.

Det er derfor et formål at tilvejebringe nye
25 legemuligheder med et elektronisk legetøj.

Dette  opnås, når det indledningsvis nævnte legetøjsselement er kendetegnet ved at legetøjsselementet er indrettet til at registrere impulsmønstre, der indeholder impulser, der har flanker med intervaller, der
30 er længere end et menneskes reaktionstid og til at styre

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enheden på forskellig måder ved at vælge et programtrin i afhængighed af et registreret impulsmønster.

Dermed opnås det at legetøjsselementet kan fjernbetjenes med lyd eller specielt med lys. Fjernbetjening med lys
5 sker ved, at en bruger signalerer med fx en almindelig håndholdt lampe, der er drevet af batterier eller af lysnettet. Signaleringen sker ved, at brugeren manuelt tænder og slukker lampen og derved frembringer impulser af synligt lys med en forudbestemt sekvens af korte og
10 lange impulser og mellemrum. Signaleringen kan også ske ved hjælp af lydimpulser, der fx kan frembringes ved at brugeren klapper i hænderne eller fløjter eller synger en bestemt sekvens af korte og lange impulser og mellemrum.

Opfindelsen vil nu blive beskrevet med henvisning til
15 tegningen, hvor:

fig. 1 viser et blokdiagram for et fjernbetjent legetøjsselement til fjernbetjening ved hjælp af signaler fra en fjernbetjeningsenhed og til styring af enheder;

fig. 2 viser et rutediagram for et program til at vælge
20 en delmængde af programtrin fra en mængde af programtrin i afhængighed af et betjeningsvalg;

fig. 3 viser et rutediagram for et program til at styre en enhed på forskellig måder ved at vælge et programtrin i afhængighed af et registreret impulsmønster;

25 fig. 4 viser eksempler på registrerede impulsmønstre;


fig. 5 viser et eksempel på et udsendt impulsmønster og et dertil hørende registreret impulsmønster;

fig. 6 viser et første og et andet legetøjsselement, hvor det første legetøjsselement kan overføre data til det
30 andet legetøjsselement;

fig. 7 viser et rutediagram for lagring af programtrin;
og


fig. 8 viser et blokdiagram for et første
legetøjsselement, der kan overføre data til et andet
5 legetøjsselement.

Fig. 1 viser et blokdiagram for et fjernbetjent
legetøjsselement til fjernbetjening ved hjælp af signaler
fra en fjernbetjeningsenhed og til styring af enheder. En
bruger 101, for eksempel et legende barn, kan betjene en
10 signalgiver, for eksempel en lommelampe 102. Lommelampen
kan betjenes ved skiftevis at tænde og slukke lampen
eller ved at bevæge lampens lyskegle. Lyskeglen kan
rettes mod en lysdetektor 103. Lysdetektoren kan være
placeret bag en beskyttende lysgennemtrængelig plade i et
15 legetøjsselement 104. Legetøjsselementet kan for eksempel
være et byggeelement, der kan sammenkobles med andre
byggeelementer af samme eller af en anden type.
Lysdetektoren 103 kan afgive et signal i afhængighed af
det lys den modtager. Signalet kan være et analogt
20 signal, der afhænger af lysintensiteten der falder ind på
lysdetektoren eller blot være et simpelt on/off signal.
Legetøjsselementet 104 omfatter en mikro-processor 105,
der kan udføre et eller flere programmer lagret i
hukommelsen 110. Mikro-processoren 105 er forbundet til
25 en række enheder for afgivelse og modtagelse af signaler.
En første enhed 109 kan modtage signaler om ydre
mekaniske påvirkninger for eksempel fra en kontakt 112.
En anden enhed 108 kan afgive lyssignaler via en lampe
eller ~~diode~~ diode 113. En tredje enhed 107 kan styre en
30 motor 114. En fjerde enhed 106 kan afgive lydsignaler via
en lyd giver 115 for eksempel en højttaler eller et piezo-
elektrisk element. Endvidere kan mikro-processoren 105
styre et LCD display 116. Kontakten 111 kan benyttes til
at vælge en tilstand for mikro-processoren 105 således at

en udvalgt delmængde af programtrin kan vælges ud af en mængde af programtrin.

Det er således muligt at sammensætte de ovennævnte elementer/enheder således at legetøjsselementet kan indgå
5 i en konstruktion som for eksempel en bil eller et andet køretøj eller en bevægelig figur, hvor konstruktionen er sammensat af elementer i et konstruktionslegetøjssæt.

Fig. 2 viser et rutediagram for et program til at vælge en delmængde af programtrin fra en mængde af programtrin
10 i afhængighed af et betjeningsvalg. Betjeningsvalget kan for eksempel foregå ved at betjene kontakten 111. Rutediagrammet starter i trin 200. Derefter vælges en delmængde af programtrin. En delmængde af programtrin benævnes også en regel. I 201 vælges regel R ud af en
15 samling af forudbestemte regler R1-R7 i form af regelbaserede programmer lagret i hukommelsen 110. I trin 202 afgøres det om den valgte regel er regel R=R1. Hvis det er tilfældet (ja) udføres det regelbaserede program R1 i trin 203. Alternativt (nej) undersøges det om regel
20 R=R2 blev valgt. Tilsvarende afgøres det i trinene 204, 206 og 208 om den valgte regel er regel 2, 3 eller 7 og der udføres respektive regelbaserede programmer i trin 205, 207 eller 209. Det er således muligt at vælge en af flere forudbestemte regler. Disse regler kan for eksempel
25 være bestemt af producenten af legetøjsselementet.

Det vil dog også være muligt at lagre brugerdefinerede regler ved at kombinere de forudbestemte regler. Dette vil bl. omtalt i det nedenstående i forbindelse med beskrivelsen af fig. 7.

30 Fig. 3 viser et rutediagram for et program til at styre en enhed på forskellig måder ved at vælge et programtrin i afhængighed af et registreret impulsmønster. I afhængighed af det registrerede impulsmønster kan der

afgives et audio-/visuelt signal som kvittering for modtagelse af impulsmønsteret. Impulsmønsteret kan genereres ved at blinke med en lommelampe.

Trin 301 svarer til trin 208 på fig. 2. I trin 302
5 detekteres et impulsmønster for eksempel bestående af en puls af 1 sekunds varighed, en pause på et sekund, en puls af 1 sekunds varighed, en pause af 1 sekunds varighed og en puls af 3 sekunders varighed.

I trin 302 afgøres det om impulsmønsteret er et kendt
10 impulsmønster (for eksempel lagret sammen med andre impulsmønstre i hukommelsen 110). Hvis impulsmønsteret er et kendt mønster S1 (ja) afspilles et for brugeren genkendeligt audio- eller visuelt signal L1 i trin 305. Et audiosignal kan for eksempel afspilles ved hjælp af et
15 piezo-elektrisk element. Dermed kan brugeren modtage en kvittering for at kommandoen er genkendt. Dette kan være en del af det at lege med legetøjsselementet. Brugeren kan belønnes i trin 307 ved at legetøjsselementet udfører en given handling, ved at udføre en sekvens af kommandoer i
20 mikro-processoren 105.

Alternativt, hvis lyssekvensen ikke blev genkendt i trin 303 kan der afspilles en anden lydsekvens L2 i trin 304. Efterfølgende kan legetøjsselementet udføre en handling svarende til et forkert svar.

25 I det følgende gives der eksempler på mulige funktioner for en række regelbaserede programmer R1-R7 (regel 1, regel 2, regel 3, regel 4, regel 5, regel 6 og regel 7).

Regel 1:

- 30 1) Pause på 1 sekund.
2) En lydsekvens (startlyd) bliver afspillet.
3) 0,5 sekunds pause.
4) En lydsekvens (bagud lyd) bliver afspillet.
5) Motoren kører bagud i 5 sekunder.
35 6) Motoren stopper.

- 7) Punkt 3 - 6 gentages 2 gange (3 ialt)
- 8) Reglen stoppes.

Regel 2:

- 5 1) Pause på 1 sekund.
- 2) En lydsekvens (startlyd) bliver afspillet.
- 3) 0,5 sekunds pause.
- 4) En lydsekvens (bagud lyd) bliver afspillet.
- 10 5) Motoren kører bagud i 5 sekunder.
- 9) Motoren stopper.
- 6) 0,5 sekunds pause.
- 7) En lydsekvens (fremad lyd) bliver afspillet.
- 8) Motoren kører fremad i 5 sekunder.
- 15 10) Motoren stopper.
- 11) Punkt 3 - 10 gentages 2 gange (3 ialt)
- 12) Regelen stoppes

Regel 3:

- 20 1) Pause på 1 sekund.
- 2) En lydsekvens (kalibrer lyd) bliver afspillet.
- 3) En lydsekvens (startlyd) bliver afspillet.
- 4) En lydsekvens (bagud lyd) bliver afspillet.
- 25 5) Motoren kører baglæns i maximum 7 sekunder.
- 6) Hvis der er detekteret lys inden de 7 sekunder er gået (punkt 5):
 - Motor stopper.
 - Fremad lydsekvens afspilles.
 - 30 - Motor kører fremad så længe lys detekteres
 - Hvis lys forsvinder:
 - i. Motor stopper efter 0,5 sekund.
 - ii. Hvis lyset kommer igen indenfor 2 sekunder starter motoren igen.
 - 35 iii. Hvis lyset forbliver borte i 2 sekunder - forbliver motoren slukket.
- 7) Punkt 4 - 6 gentages så længe at lys detekteres indenfor de 7 sekunder og indtil at 3 forsøg uden lys er foretaget.
- 40 8) Motoren stopper.
- 9) Regelen stopper.

Eksempel på brugerens oplevelse: Modellen konstrueres således at når modellen kører bagud drejer modellen og

45 når den kører fremad kører den ligeud. Regelen giver derfor en søg lys funktion - når bruger lyser på modellen kører modellen frem mod brugeren.

Regel 4:

- 1) Pause på 1 sekund.
- 2) Motor retning sættes til fremad.
- 5 3) En lydsekvens (kalibrer lyd) bliver afspillet.
- 4) En lydsekvens (startlyd) bliver afspillet.
- 5) Når lys dekteres:
 - Motor kører rundt.
- 6) når mørke dekteres:
 - 10 - Motoren stopper.
- 7) Når der dekteres 2 lysblink:
 - Motor retningen ændres enten fra frem til tilbage eller tilbage til frem.
 - En lydsekvens afspilles i henhold til retningen af motoren.
- 15 8) Reglen stoppes 15 minutter efter det sidste lys blev dekteret.

Eksempel på brugerens oplevelse: Brugeren oplever en fjernstyring. Brugeren kan køre med motoren ved at lyse konstant på modellen, og ændre motorretningen ved at blinke til modellen.

Regel 5:

- 25 1) Pause på 1 sekund.
- 2) En lydsekvens (kalibrer lyd) bliver afspillet.
- 3) En lydsekvens (startlyd) bliver afspillet.
- 4) Når et lysblink detekteres:
 - 30 - Der afspilles en lyd.
 - Hvis motoren er slukket, tændes den.
 - Hvis motoren er tændt, forøges hastigheden med et step.
- 5) Hvis der ikke dekteres lys:
 - 35 - Hvis hastigheden er større en step 0, bliver hastigheden formindsket med et step.
 - Hvis hastigheden er step 0, stoppes motoren
- 6) Regelen stopper 15 minutter efter sidste lysblink.

Eksempel på brugerens oplevelse: Brugeren oplever en form for "høj i live" funktion. Jo flere og hurtigere blink jo hurtigere kører modellen og jo flere lyde spiller den. Blinker brugeren ikke til den "dør" modellen.

Regel 6:

- 45 1) Pause på 1 sekund.
- 2) Motor retning sættes til bagud.

- 3) En lydsekvens (kalibrer lyd) bliver afspillet.
 - 4) En lydsekvens (startlyd) bliver afspillet.
 - 5) Når der sker en ændring i lysniveauet:
 - Alarm lydsekvensen bliver afspillet.
 - 5 - Motoren kører i 1 sekund.
 - Motor retningen ændres.
 - De 3 ovennævnte punkter gentages 6 gange.
 - 6) Reglen stoppes
- 10 Eksempel på brugeres oplevelse: Brugeren oplever en alarm funktion hvor brugeren f.eks. placerer en lommelygte der lyser på modellen. Herefter startes reglen, når lysstrålen fra lommelygten brydes spilles alarmlyden og motoren kører.
- 15 Regel 7:
- 1) Pause på 1 sekund.
 - 2) En lydsekvens (kalibrer lyd) bliver afspillet.
 - 20 3) En lydsekvens (startlyd) bliver afspillet.
 - 4) Pause på 1,5 sekund.
 - 5) En lang eller kort tone bliver spillet (random)
 - 6) Punkt 4 og 5 gentages 2 til 4 gange (random). Ialt 3 til 5 gange.
 - 25 Herefter skal brugeren blinke lange og korte lysblink til modellen i overensstemmelse med tonerne.
 - 7) Check lysblink længde:
 - Kort blink skal være mindre end 0,5 sekund.
 - 30 - Lang blink skal være mellem 0,5 - 2 sekund.
 - 8) Hvis længden og antallet af lysblinkene er korrekte:
 - Afspil lydsekvens (korrekt lyd).
 - Motor kører fremad i 300 milisekunder.
 - Reglen stopper.
 - 35 9) Hvis længden og antallet af lysblinkene er forkerte:
 - Afspil lydsekvens.
 - Motor kører bagud i 300 milisekunder.
 - Gentag punkt 4 - 7, 2 gange mere eller indtil succes.
 - 40 Hvis man 3 gange har afgivet forkerte blink afspilles en lydsekvens (drille lyd).
 - Reglen stopper.

Eksempel på brugerens oplevelse: Brugeren får afspillet 3

45 - 5 toner. Tonerne bliver afspillet i enten en kort version eller en lang version. Når brugeren har hørt

tonerne skal bruger blinke længden og antallet af tonerne tilbage i form af lys. Hvis bruger gør dette korrekt fås en succes lyd, og motoren kører kortvarigt fremad. Hvis ikke brugeren blinker den korrekte længde eller antal afspilles en lyd og motoren kører kortvarigt bagud. 5 Brugeren får 2 ekstra forsøg til at klare opgaven (3 forsøg i alt). Hvis ikke brugeren får succes ved de 3 forsøg afspilles en drille lyd.

I en foretrukken udførelsesform kan et givet genkendeligt 10 impulsmønster (S1-S7) relateres til en given lydsekvens (L1-L7) således at brugeren kan få besked om hvilket impulsmønster, der er modtaget og for eksempel hvilken regel eller kommando, der vil blive udført af mikroprocessoren.

15 Fig. 4 viser eksempler på registrerede impulsmønstre M1, M2 og M3. Impulsmønstrene kan vælges på mange forskellige måder blot de opfylder den betingelse, at karakteristika i form af varigheden mellem to på hinanden følgende flanker, for mønstrene genereres således at varigheden er 20 større end den menneskelige reaktionstid. To på hinanden følgende flanker kan være en positiv flanke efterfulgt af en negativ flanke eller to på hinanden følgende positive flanker.

25 Impulsmønsteret M1 omfatter en positiv og en negativ flanke.

Impulsmønsteret M2 omfatter to på hinanden følgende pulser af relativt kort varighed, for eksempel 400 millisekunder adskilt af en periode på for eksempel 700 millisekunder.

30 Impulsmønsteret M3 omfatter en puls med en relativt lang varighed, på for eksempel 20 sekunder.

De nævnte impulsmønstre kan forårsage en respons fra legetøjsselementet, eksempelvis som beskrevet ovenfor.

Fig. 5 viser et eksempel på et udsendt impulsmønster og et dertil hørende registreret impulsmønster. Dette kan
5 være et eksempel på et impulsmønster i forbindelse med den ovenfor beskrevne regel 7. Impulsmønsteret til venstre kan angive afspilning af to korte toner efterfulgt af en lang tone med varigheder henholdsvis t1 og t2. Efter afspilning af tonerne forventer
10 legetøjsselementet at brugeren forsøget at efterligne mønsteret ved at generere lysimpulser med mønster, det vil sige to korte impulser efterfulgt af en lang impuls.

Da det kan være svært for brugeren, der forsøger at efterligne mønsteret, at finde den præcise længde af de
15 udsendte impulser og generere impulser med samme længde, accepteres det at pulserne kan afvige med et specificeret afvigelse d.

Fig. 6 viser et første og et andet legetøjsselement, hvor det første legetøjsselement kan overføre data til det
20 andet legetøjsselement. Det første legetøjsselement 601 omfatter en mikroprocessor 607, et I/O modul 610, en hukommelse 609 og en brugergrænseflade 608. Endvidere omfatter legetøjsselementet 601 en to-vejs kommunikationsenhed 606 for kommunikation via en infrarød
25 sender/modtager 605 eller for kommunikation ved hjælp af en lyskilde/lysdetektor 604, der kan udsende og detektere synligt lys.

Tilsvarende omfatter det andet legetøjsselement 602 en
mikroprocessor 614, et I/O modul 615 og en hukommelse
30 616. Endvidere omfatter legetøjsselementet 602 en kommunikationsenhed 613 for kommunikation via en infrarød sender/modtager 612 eller for kommunikation ved hjælp af

en lyskilde/lysdetektor 611, der kan udsende og detektere synligt lys.

I en foretrukken udførelsesform for opfindelsen kan det første legetøjsselement både sende og modtage data, 5 hvorimod det andet legetøjsselement kun kan modtage data.

Data kan overføres som synligt lys via en lysleder 603. Alternativt kan data overføres som infrarødt lys 617 og 618. Data kan være i form af koder, der angiver en specifik instruktion og tilhørende parametre, der kan 10 fortolkes af mikroprocessorerne 607 og/eller 614. Alternativt kan data være i form af koder der referere til et delprogram eller en regel lagret i hukommelsen 616.

I/O modulerne 610 og 615 kan forbindes til elektroniske 15 enheder (for eksempel motorer) for styring af disse. I/O modulerne 610 og 615 kan også forbindes til elektroniske sensorer, således at enhederne kan styres i afhængighed af detekterede signaler.

I en foretrukken udførelsesform er fiberen 603 indrettet 20 således at en del af det synlige lys, den transmitterer slipper ud gennem fiberen. Derved er det muligt for en bruger - direkte - at følge med i transmissionen. Brugeren kan for eksempel se hvornår kommunikationen starter og stopper.

25 Lyset gennem fiberen kan overføre data med en given datatransmissionsfrekvens som skift i lysniveauet i fiberen. Data kan transmitteres således at det er muligt for brugeren at observere enkelte lysniveauskift under en transmission (det vil sige ved en passende lav 30 datatransmissionsfrekvens) eller blot at se om transmissionen er i gang (det vil sige ved en passende høj datatransmissionsfrekvens).

Almindeligvis er det uønsket at en del af det lys, der skal transmitteres gennem fiberen slipper ud gennem fiberen. Men i forbindelse med kommunikation mellem to legetøjselementer er det en ønsket effekt, da det således
5 er muligt at følge med i kommunikationen på en meget intuitiv måde.

Der er kendt for en fagmand, hvordan det opnås at en del af lyset slipper ud gennem fiberen. Det kan for eksempel lade sig gøre ved at tilføre urenheder til fiberens kappe
10 eller ved at lave mekaniske hak eller mønstre i fiberen. Den del af lyset, der skal slippe ud gennem fiberen kan også styres ved at styre forholdet mellem brydningsindeks i en lysleders kerne og kappe.

Fig. 7 viser et rutediagram for lagring af programtrin.
15 Trin 701 svarer til trin 211. Rutediagrammet viser hvorledes en bruger kan lagre egne regler overført fra en ekstern enhed for eksempel et andet legetøjselement som angivet ovenfor eller fra en personlig computer. I en udførelsesform overføres kun referencer til de regler der
20 er lagret i legetøjselementet. Dermed reduceres den nødvendige båndbredde for kommunikation mellem legetøjselementerne. I trin 702 undersøges det om der modtages download-signaler fra eksterne enheder. Hvis det er tilfældet undersøges det i trin 703 om download-signalerne er valide. Hvis signalerne ikke er valide
25 (nej) afspilles en lyd, der indikerer fejl, i trin 704. Er signalerne valide (ja) undersøges det om signalerne skal fortolkes som kommandoer, der skal udføres med det samme (~~før~~) eller om signalerne skal fortolkes som
30 kommandoer, der skal lagres med henblik på senere eksekvering (gem). Hvis kommandoerne skal udføres med det samme udføres disse i trin 706, hvorefter programmet returnerer til trin 702. Hvis kommandoerne skal lagres

spilles en anerkendelseslyd i trin 707 og kommandoen lagres som et programtrin i trin 708 i lageret 709.

Som eksempel på en kommando, der skal udføres med det samme kan være at kommandoerne i lagret 709 skal
5 eksekveres.

I en alternativ udførelsesform kan brugerens egne regler dannes ved at sammensætte en kombination af eksisterende regler uden brug af en ekstern enhed.

Fig. 8 viser et blokdiagram for et første
10 legetøjsselement, der kan overføre data til et andet legetøjsselement. Legetøjsselementet 801 omfatter en række elektroniske midler for programmering af legetøjsselementet således, at det kan påvirke elektroniske enheder (for eksempel motorer) i afhængighed
15 af signaler opsamlet fra forskellige elektroniske sensorer (for eksempel elektriske kontakter).

Dermed kan legetøjsselementet bringes til at udføre avancerede funktioner som for eksempel hændelsesstyret bevægelse, under forudsætning af at legetøjsselementet
20 kombineres med de elektroniske enheder/sensorer på passende vis.

Legetøjsselementet 801 omfatter en mikroprocessor 802, der er forbundet til en række enheder via en kommunikationsbus 803. Via kommunikationsbussen 803 kan
25 mikroprocessor 802 modtage data fra to A/D omsættere 'A/D input #1' 105 og 'A/D input #2' 806. A/D omsætterne kan opsamle diskrete multibit signaler eller simple binære signaler. Endvidere er A/D omsætterne indrettet til at kunne detektere passive værdier som for eksempel ohmsk
30 modstand.

Mikroprocessoren 802 kan styre elektroniske enheder som for eksempel en elektromotor (ikke vist) via et sæt terminaler 'PWM output #1' 807 og 'PWM output #2' 808. I en foretrukken udførelsesform for opfindelsen styres de
5 elektroniske enheder af et pulsbreddemoduleret signal.

Endvidere kan legetøjsselementet afgive lydsignaler eller lydsekvenser ved at styre en lyd giver 809, for eksempel en højttaler eller piezoelektrisk enhed.

Via lyskilden 'VL output' 810 kan legetøjsselementet
10 afgive lyssignaler. Disse lyssignaler kan afgives ved hjælp af lysdioder. Lysdioderne kan for eksempel være indrettet til at indikere forskellige tilstande for legetøjsselementet og de elektroniske enheder/sensorer. Endvidere kan lyssignalerne benyttes som
15 kommunikationssignaler til andre legetøjsselementer af en tilsvarende type. Lyssignalerne kan for eksempel benyttes til at overføre data til et andet legetøjsselement via en lysleder.

Via lysdetektoren 'VL input' 111 kan legetøjsselementet
20 modtage lyssignaler. Disse lyssignaler kan blandt andet bruges til at detektere intensiteten af lyset i det rum legetøjsselementet befinder sig i. Lyssignalerne kan alternativt modtages via en lysleder og repræsentere data fra et andet legetøjsselement eller en personlig computer.
25 Samme lysdetektor kan således have funktion for at kommunikere via en lysleder og for at fungere som lyssensor for detektering af intensiteten af lyset i det rum legetøjsselementet befinder sig i.

I en foretrukken udførelsesform er 'VL input' 811
30 indrettet til valgfrit enten at kommunikere via en lysleder eller alternativt, at detektere intensiteten af lyset i det rum legetøjsselementet befinder sig i.

Via den infrarøde lysdetektor 'IR input/output' 812 kan legetøjselementet overføre data til andre legetøjselementer eller modtage data fra andre legetøjselementer eller for eksempel en personlig
5 computer.

Mikroprocessoren 802 benytter en kommunikationsprotokol for modtagelse eller afsendelse af data.

Displayet 804 og tasterne 'skift' 813, 'kør' 814, 'vælg' 115 og 'start/afbryd' 816 udgør en brugergrænseflade for
10 betjening/programmering af legetøjselementet. I en foretrukken udførelsesform er displayet et LCD display, der kan vise en række bestemte ikoner eller symboler. Symbolernes fremtoning på displayet kan styres individuelt, for eksempel kan et ikon være synligt, være
15 usynligt og bringes til at blinke.

Ved at påvirke tasterne kan legetøjselementet programmeres samtidig med, at displayet giver en tilbagemelding til en bruger, om det program der er ved at blive genereret eller udført. Dette vil blive
20 beskrevet nærmere i det følgende. Idet brugergrænsefladen omfatter et begrænset antal elementer (det vil sige et begrænset antal ikoner og taster), opnås det at et barn, der skal lege med legetøjet hurtigt vil lære at betjene det.

25 Legetøjselementet omfatter også en hukommelse 817 i form af RAM og ROM. Hukommelsen indeholder et operativsystem 'OS' 818 for styring af mikroprocessorens basale funktioner, en programstyring 'PS' 819, der kan styre afvikling af brugerspecificerede programmer, et antal
30 regler 820, hvor hver regel består af et antal bestemte instruktioner til mikroprocessoren og et program 821 i RAM, som udnytter de bestemte regler.

I en foretrukken udførelsesform er legetøjselementet baseret på en såkaldt single chip processor, der omfatter et antal ind- og udgange, hukommelse og en mikroprocessor i et enkelt integreret kredsløb.

- 5 I en foretrukken udførelsesform omfatter legetøjselementet lysdioder, der kan angive omløbsretning for tilsluttede motorer.

PATENTKRAV

1. Et fjernbetjent legetøjsselement til fjernbetjening ved
hjælp af signaler fra en fjernbetjeningsenhed, hvor
5 legetøjsselementet omfatter

en sensor, der kan detektere signalerne

mindst en enhed, der styres af en mikroprocessor i
afhængighed af et program, som eksekveres af
mikroprocessoren, hvor programmet omfatter programtrin,

10 kendetegnet ved at

legetøjsselementet er indrettet til at registrere
impulsmønstre, der indeholder impulser, der har flanker
med intervaller, der er længere end et menneskes
reaktionstid og til at

15 styre enheden på forskellig måder ved at vælge et
programtrin i afhængighed af et registreret
impulsmønster.

2. Et fjernbetjent legetøjsselement ifølge krav 1,
kendetegnet ved, at apparatet er indrettet til at reagere
20 på impulser af lys.

3. Et fjernbetjent legetøjsselement ifølge krav 1,
kendetegnet ved, at apparatet er indrettet til at reagere
på impulser af synligt lys.

4. Et fjernbetjent legetøjsselement ifølge krav 1,
25 kendetegnet ved, at apparatet er indrettet til at reagere
på lydimpulser.

5. Et fjernbetjent legetøjsselement ifølge krav 1
kendetegnet ved, at de nævnte intervaller er længere end

100 millisekunder, 200 millisekunder, eller 300 millisekunder.

6. Et fjernbetjent legetøjsselement ifølge krav 1 kendetegnet ved, at nævnte intervaller er længere end de
5 mindste intervaller et menneske kan frembringe ved en oscillerende bevægelse af en legemsdel.

7. Et fjernbetjent legetøjsselement ifølge krav 1 med
mindst to forskellige funktioner, der vælges ved hjælp af
signaler fra en fjernbetjeningsenhed, hvor
10 legetøjsselementer er indrettet til efter et modtaget signal til valg af funktion at afgive et signal, der afhænger af det modtagne signal.

8. Et fjernbetjent legetøjsselement ifølge krav 7, kendetegnet ved, at det afgivne signal er et akustisk
15 signal.

9. Et fjernbetjent legetøjsselement ifølge krav 7, kendetegnet ved, at det afgivne signal er et optisk signal.

10. Et fjernbetjent legetøjsselement ifølge krav 7,
20 kendetegnet ved, at signalet afgives, inden den valgte funktion udføres.

11. Et fjernbetjent legetøjsselement ifølge krav 7, kendetegnet ved, at apparatet er indrettet til at sammenligne et signal modtaget fra fjernbetjeningsenheden
25 med et antal forventede signaler, og i tilfælde af, at det modtagne signal stemmer overens med et af de forventede signaler, at afgive et første signal, og i tilfælde af, at det modtagne signal ikke stemmer overens med nogen af de forventede signaler, at afgive et andet
30 signal.

12. Programmerbart legetøj med en modtager til modtagelse af instruktioner til programmering af legetøjet, samt midler til udførelse af modtagne instruktioner,

5 k e n d e t e g n e t ved, at legetøjet har en sender til transmission af instruktioner til et andet legetøj.

13. Legetøj ifølge krav 12 k e n d e t e g n e t ved, at dets modtager er indrettet til trådløs modtagelse af instruktioner.

10 14. Legetøj ifølge krav 12 k e n d e t e g n e t ved, at dets modtager er indrettet til modtagelse af infrarød signaler.

15. Legetøj ifølge krav 12 k e n d e t e g n e t ved, at dets modtager er indrettet til modtagelse af synligt lys.

15 16. Legetøj ifølge krav 12 k e n d e t e g n e t ved, at dets modtager omfatter et tastatur til manuel indtastning af instruktioner.

20 17. Legetøj ifølge krav 12 k e n d e t e g n e t ved, at dets sender er indrettet til trådløs transmission af instruktioner til det andet legetøj.

18. Legetøj ifølge krav 17 k e n d e t e g n e t ved, at dets sender er indrettet til transmission af infrarød signaler.

25 19. Legetøj ifølge krav 16 k e n d e t e g n e t ved, at det er indrettet til via tastaturet at modtage et program omfattende mindst to instruktioner til transmission til det andet programmerbare legetøj.

SAMMENDRAG

Fjernbetjent apparat (4), f.eks. et fjernbetjent legetøj, til fjernbetjening fra en fjernbetjeningsenhed, f.eks. en lommelygte (2). Apparatet er kendetegnet ved, at det er indrettet til at reagere på en sekvens af lysimpulser, der har en repetitionsfrekvens, der er lavere end den maksimale frekvens, et menneske kan frembringe manuelt, f.eks. ved at skiftevis at tænde og slukke lygten. I en særlig udførelsesform er apparatet indrettet til efter en modtaget sekvens af lysimpulser at afgive et akustisk acceptsignal ved hjælp af en lyd giver (15).

(Fig. 5)

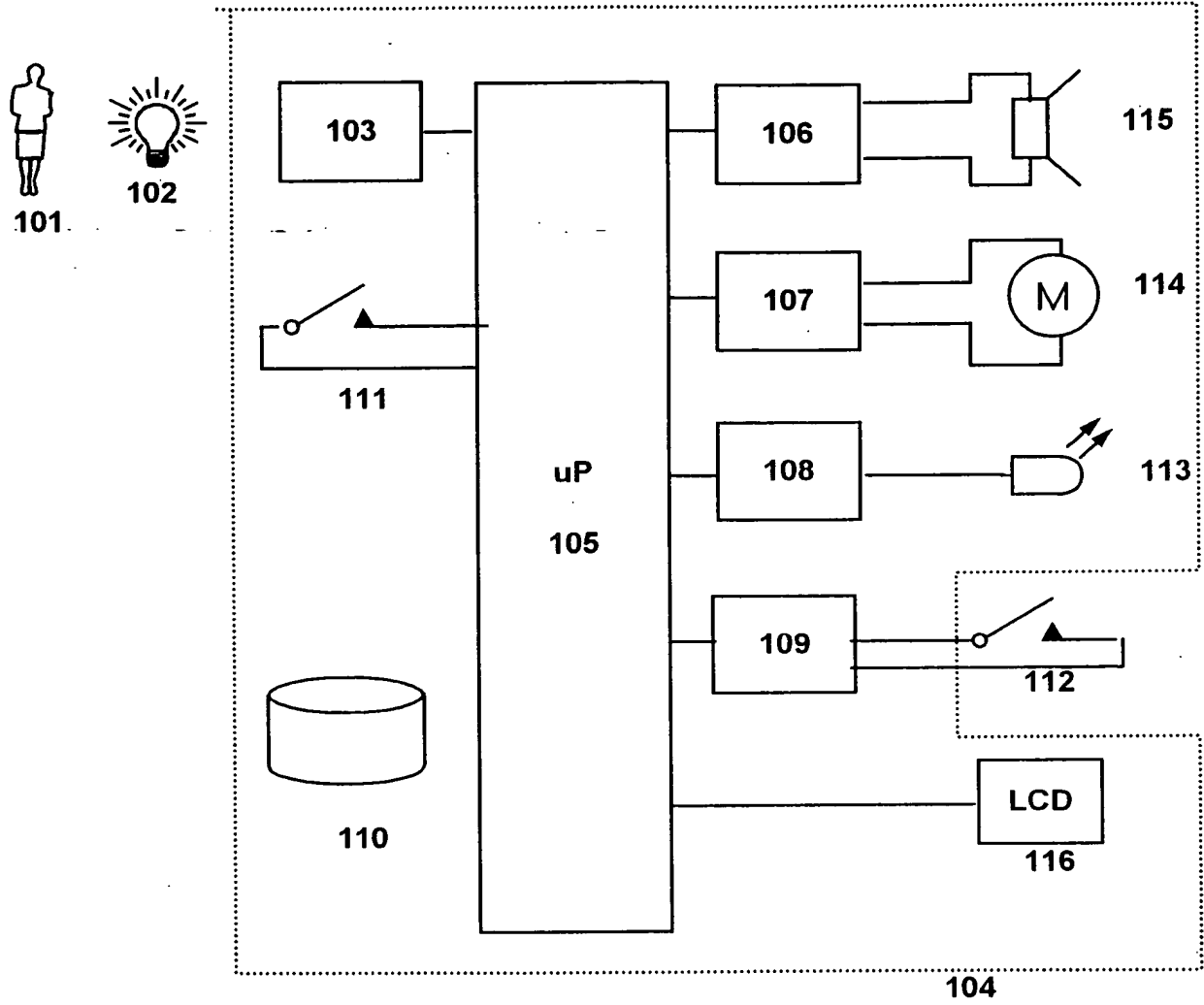


Fig. 1

2/7

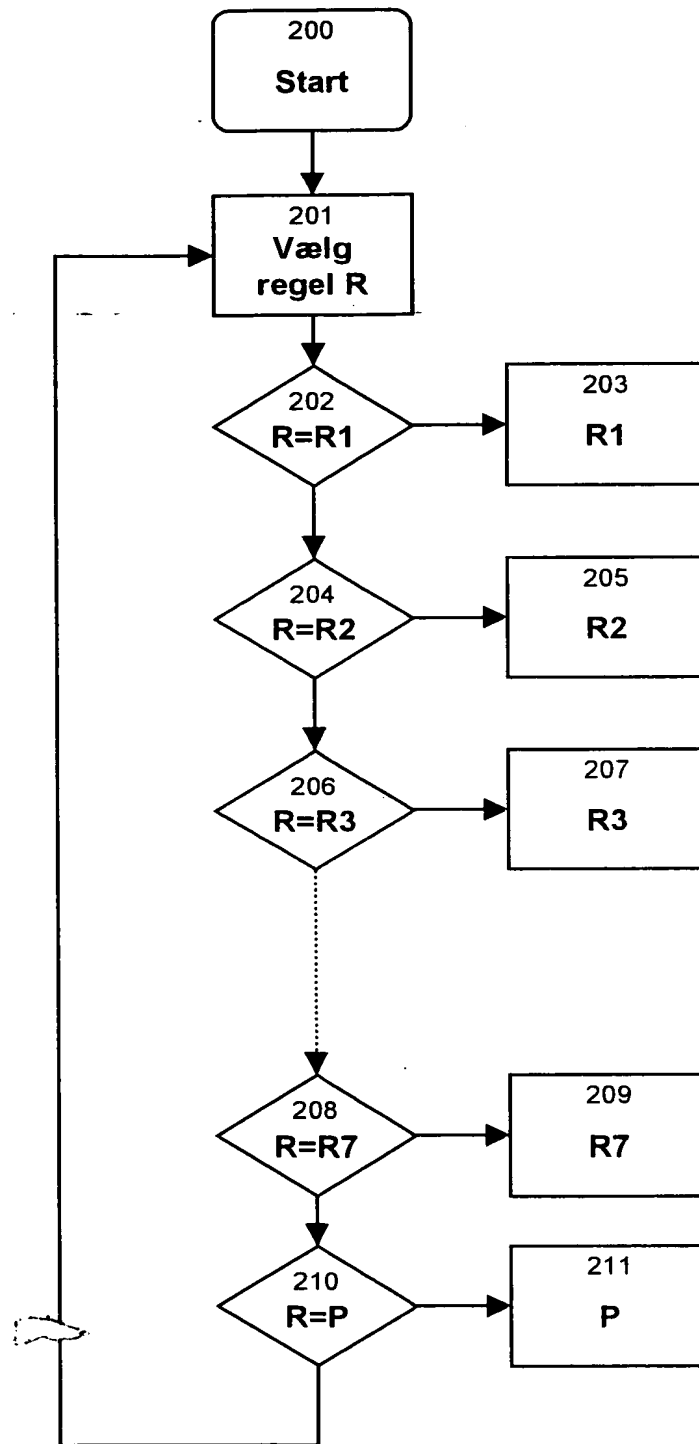


Fig. 2

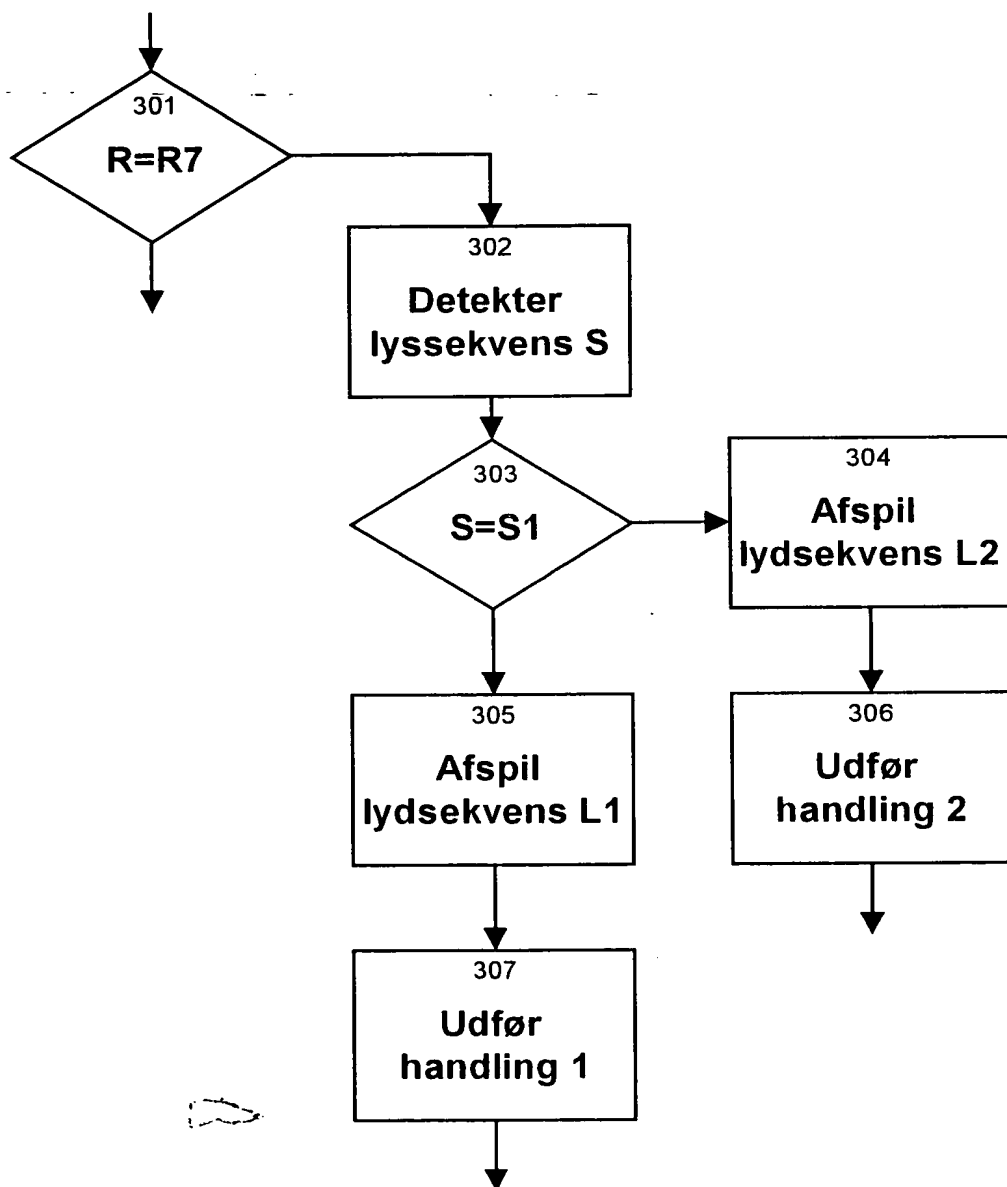


Fig. 3

Impulsmønstre

M1



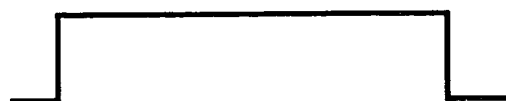
Alarm

M2



vend retning

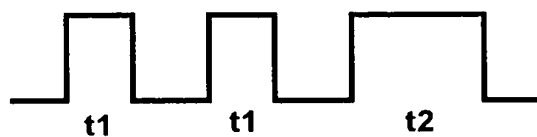
M3



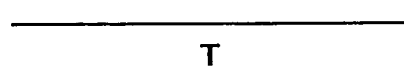
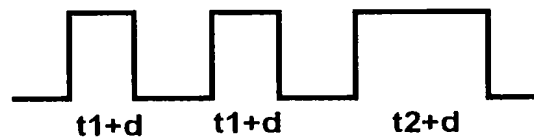
Motor on

Fig. 4

impulsmønster fra apparat (lyd)



Svar impulsmønster fra bruger (lys)



kode genkendelse

t1: 0,3 s

t2: 1,2 s

T: 10 s

d: +/- 50%

Fig. 5

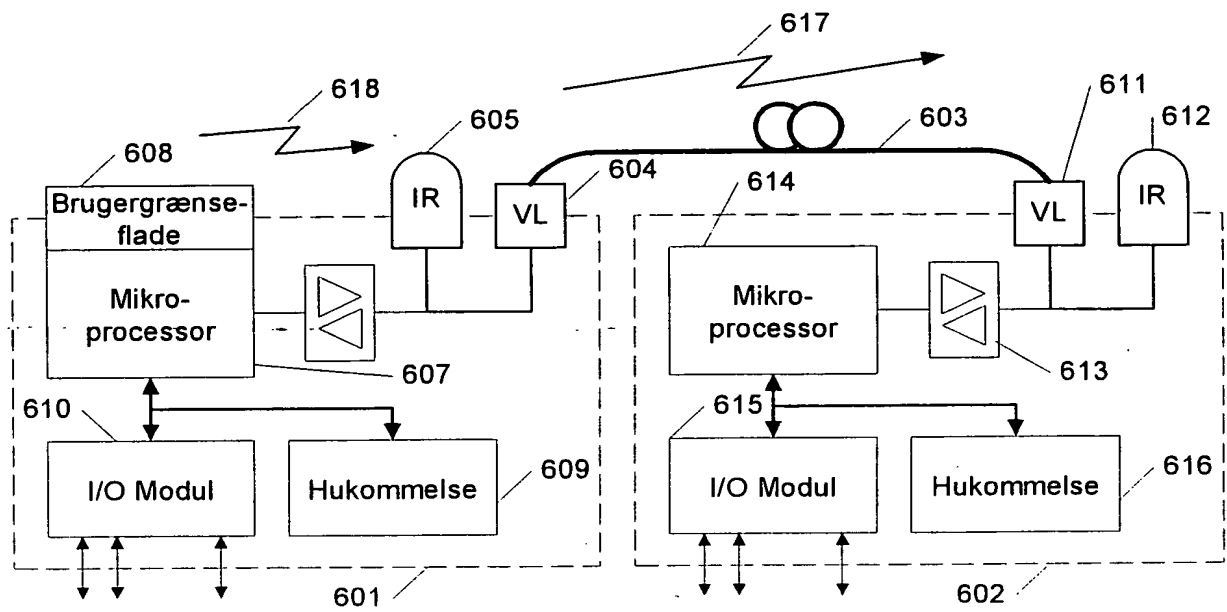


Fig. 6

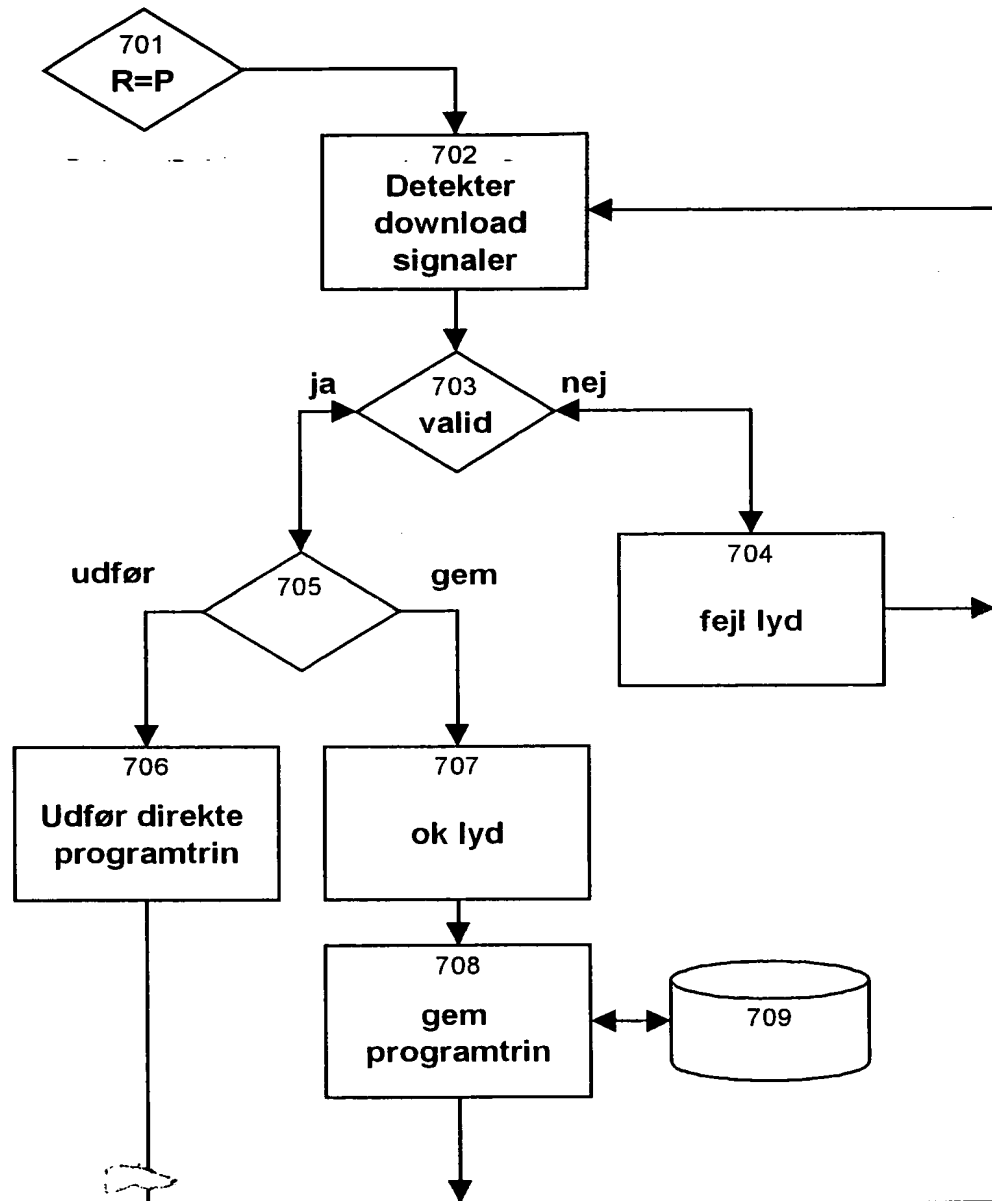


Fig. 7

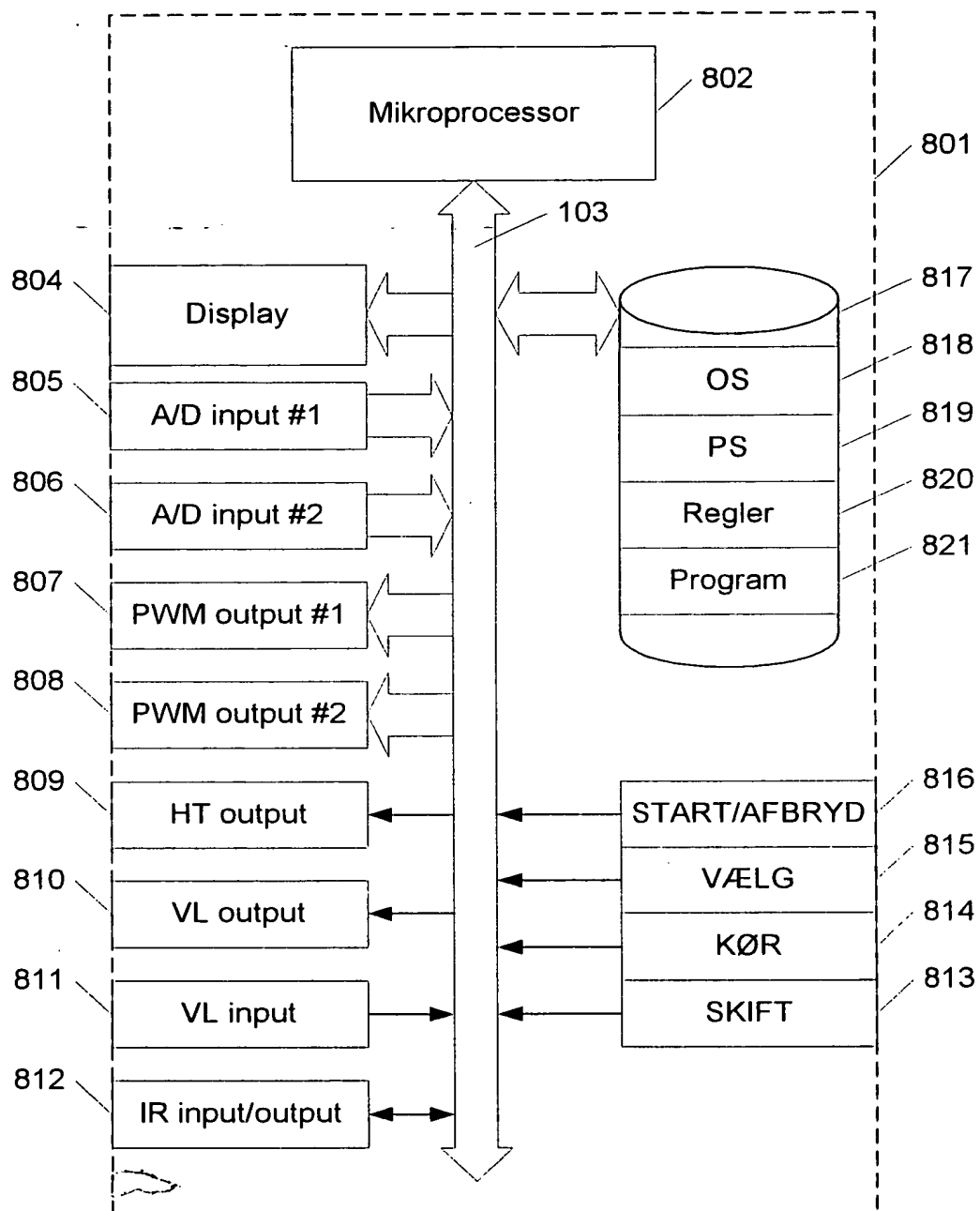


Fig. 8